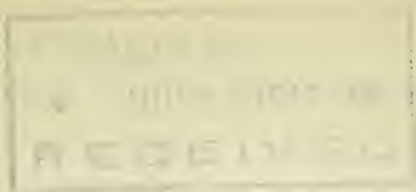


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EMERGENCY ENTOMOLOGICAL SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE.

Reporting cooperation between Federal, State and Station

Entomologists and other Agencies.

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SPECIAL WAR LITERATURE ON INSECTS DESIRED BY

BUREAU OF ENTOMOLOGY LIBRARY.

The librarian of the Federal Bureau of Entomology notes that in connection with the war a considerable amount of emergency literature is appearing in the way of form letters, special bulletins and circulars, press notices and posters. These are put forth from time to time by the State and Station entomologists, the State Councils of Defense, State Boards of Health, etc. That as complete a file as possible of this material may be preserved for reference use in the Federal Bureau the request is here made that those offices which receive the "Emergency Entomological Service" will kindly have "The Library, Bureau of Entomology, Washington, D.C." placed upon their mailing lists.

SUGGESTIONS
FROM STATE AND STATION ENTOMOLOGISTS.

The following statement has been made by Dr. T. J. Headlee regarding plans he has in operation in New Jersey:

"Practically every county in New Jersey now has a farm demonstrator, most of whom issue, at short intervals, statements regarding crop conditions which are printed by the local newspapers and discussed at community meetings. The farm demonstrator in traveling constantly over his territory is in touch with a sufficiently large number of people to spread quickly any information relative to insect control. When this office foresees an outbreak of an injurious species, advanced information is furnished to the farm demonstrators and they in turn make it their business to spread the report of the coming of injury and to urge the adoption of proper measures of control. They furthermore make it their business to discover the first evidence of serious injury and to notify their constituents that now is the time to begin to fight against the pest. At the central extension office, we have what are known as specialists in vegetable growing, fruit growing, etc. These specialists are accustomed to carry information to the counties in which no demonstrators are present.

The greatest weakness of the whole service is the lack of trained men to do sufficiently thorough entomological scouting. This lack is a real handicap because outbreaks of considerable proportions are sometimes not thoroughly appreciated until they are about ready to occur and this means that a good many growers will be unable to get materials and machinery in time to do effective work."

Prof. H. A. Gossard makes the following statement regarding work under way in Ohio.

"We have just completed an entomological survey of the state along four parallel lines, beginning in counties on the southern border and running to the counties on the northern border. Our four entomological scouts entered over one-half of the counties, spending a day in each and exploring the wheat fields, making use of the automobile for transportation. Wherever possible this work was done in conjunction with the county agents who were able to find the fields quickly and assist very much in the exploration. This work was done just ahead of the harvest which is not yet finished in the northern counties. With the exception of the southwestern and western counties, which have considerable joint worm, the state is more free from any insect threat to the wheat crop of 1918 than it has been during the past thirteen or fourteen years. Practically no Hessian fly was found, almost no chinch bug, and the amount of wheat midge was negligible; sawfly larvae were found in a few places but they were of only local significance; likewise the stalk-borer was found destroying a few acres in one or two of the counties. Several of the southwestern counties and those along the western border of the state have joint worm, ranging from 5 per cent to 50 per cent, and in an occasional field to 100 per cent. The date of seeding seems to influence the amount of joint worm as much as it does the Hessian fly, but early seeding should be the rule in case of joint worm.

We shall therefore conduct a campaign in the western and southwestern counties and in all other suspicious counties of the state, encouraging seeding a few days earlier than what is known customarily as the Hessian fly free date, since there is no menace anywhere from Hessian fly. This survey was arranged as a preliminary step to the inauguration of a campaign by other Station Departments for an increase of 50 to 100 per cent of wheat production in Ohio for 1918."

Mr. G.M. Bentley has organized an elaborate system of reporting insect injury in Tennessee. A special form for monthly reports by county correspondents has been printed. Blanks are provided for the following: Fruit trees, cereal and grain crops, field crops, vegetables, vines, and bushes, ornamental and shade trees, household pests, stored grain pests, domestic animal pests. A special form is devoted to pests of the honey bee.

In Maryland, Prof. E.N. Cory has issued a series of flexo-typed leaflets now numbering 13. They include concise suggestions about the treatments for a great variety of pests. Among the circulars are ones dealing with the external parasites of swine, the internal parasites of swine, the corn or tobacco root web worms, flea beetles, honey production, and the melon aphid.

REPORTS ON INSECT CONDITIONS.

Cereal and Forage Crops.

A new infestation of the alfalfa weevil located at Paonia, Delta county, Colorado, was reported to this Bureau by Prof. C. P. Gillette, on July 15.

In response to a telegraphic request from this office, Mr. George I. Reeves, in charge of the alfalfa weevil investigations, detailed Mr. T. R. Chamberlin to investigate the outbreak. According to a telegram received from Mr. H. K. Plank of this Bureau, the infestation covers an area of approximately three square miles.

In spite of the extreme heat and drought which has prevailed in Kansas for the past several weeks, the Hessian fly is reported by Mr. Kelly as apparently in a normal condition. Mr. Davis reports no material change in the Hessian fly condition throughout Illinois and Indiana. Comparatively little spring injury occurred even in the most heavily infested areas. There seems, however, to be a probability of serious fly injury in southern Indiana, Illinois and northern Tennessee, during the coming fall.

Several thousand copies of a postcard urging the wheat growers of Kansas to organize and prevent Hessian fly injury to the 1918 crop were mailed to the farmers of eastern Kansas through the States Relations Service during the past month.

The chinch bug situation has developed very much as forecast in the last issue of this publication. According to Assistant Entomologist Neil D. Zuber, injury has occurred in the following counties of Texas; Dallas, Hunt, Hopkins, Franklin, Titus, Upshur, Navarra, Ellis, Walker and Hill. Scattered injuries are reported in Illinois by Mr. Davis, with Jerseyville as the approximate focus of the infestation. The area infested is not large.

The poster mentioned in last month's issue was distributed about July 15 and can still be supplied in quantities to interested persons.

Dr. S. A. Forbes reports the conditions in Illinois to be as follows:

"The chinch bug infestation in Illinois, greatly restrained by weather conditions, was nevertheless sufficient to result in considerable injury to corn, about 5 per cent of the fields adjoining wheat in three southwestern counties being seriously injured, and considerable local damage being done elsewhere in southern Illinois. The greatest degree of injury reported was the killing of the first twenty rows of corn next the wheat. There are now chinch bugs enough in the whole southwestern part of the state to threaten serious and general injury to wheat, oats, and corn next year if the weather should be favorable to insect multiplication unless, indeed, general action can be brought about for the burning out of the bugs in their winter shelter or, if this should prove impossible, for their destruction before they leave the wheat."

Dr. T.J.Headlee, State Entomologist of New Jersey, reports that the flight of May beetles which recently occurred was one of the largest witnessed in several years and the area affected included practically the entire state. This flight doubtless is a portion of brood "A", as predicted by Mr. Davis in the poster issued during the spring from this office.

The grasshopper situation in western Montana is still serious. Two thousand dollars additional have been appropriated by the Bureau of Indian Affairs for the purchase of material and labor in the grasshopper campaign.. Mr. Davis reports serious injury from grasshoppers occurring during June in the bottom lands south of Evansville, Indiana. About five thousand acres were affected. The poison baits were found effective in controlling the outbreak. Untreated lands are still heavily infested. Mr. Urbahns reports that the fight in California is still being waged and that the poison baits are being used very effectively. He found that sodium arsenite is probably even more effective than Paris green and somewhat cheaper in price, where it can be obtained. Mr.C.N. Ainslie is cooperating with the extension service in North and South Dakota where grasshopper campaigns are being conducted. In North Dakota the center of the principal infestation is Hettinger; while in South Dakota, the western two-thirds of the state are affected. As noted elsewhere Mr. Myron Swenk reports that grasshoppers have become numerous and destructive over most of that portion of Nebraska lying west of the 100th meridian. The usual abundance of blister beetles is apparent and these are proving injurious to alfalfa fields.

A severe outbreak of cut worms occurred during the past month in the river bottoms west of Princeton, Indiana, where some fifty thousand acres were affected. The injury ran from twenty-five per cent to as high as 100 per cent. Poison baits were used with good effect and in one experiment, sawdust was used in place of bran with apparent success.

The clover root curculio is reported by Prof. R.H.Pettit as causing trouble in alfalfa fields in southwestern Michigan.

Dr. E.P.Felt states that reports received from the western portion of New York State indicate a somewhat general prevalence of the wheat midge in that state.

Dr. S.A.Forbes has contributed the following two notes on the occurrence of insects in Illinois:

"The southern corn root-worm beetle (Diabrotica 12-punctata) has been abundant in western Illinois during the past month, and injury to corn by this root-worm is beginning to show in a large percentage of the corn fields in that part of the state. This is in continuation of a notable outbreak of this insect which attracted attention last year, when it caused the loss of nearly 50 per cent of the corn in some of the west-central counties of Illinois. Details of soil, situation, management, and recent agricultural history are being collected in this infested region, with a view to the detection of conditions likely to

encourage and maintain the multiplication of this insect. Careful watch is also being kept for the appearance among the root-worms of a bacterial disease which, in 1889, effectually suppressed a small outbreak in Morgan County, Illinois. This disease is readily recognized by the color of the dead larva, which passes from gray through pink to deep red.

Sod web-worms (Crambus species) have done damage to corn in Stephenson and Winnebago counties, in extreme northern Illinois, amounting locally to a destruction of nearly half the stand. Practically all corn injured was on grass lands plowed last spring, and it evidently might have been protected by fall plowing."

W. R. Walton.

Southern Field Crop Insect Investigations.

The boll weevil has increased rapidly in numbers in the southern portion of the infested territory during the month. Experimental plots at Madison, Fla., showed practically a maximum infestation on July 26. Doctor Pierce determined the infestation at several points during the early part of July. At Savannah, Ga., he found no infestation. At Madison, Fla., 18 per cent of all forms, at Valdosta, Ga., 2 per cent, and Montgomery, Ala., 7 per cent. At Madison, Fla., the forms on plants averaged 28 squares and 4 bolls, at Valdosta, Ga., 64 squares and 12 bolls, at Montgomery, Ala., 22 squares and 6 bolls.

Examinations made on July 17 by Doctor Pierce at Meridian, Whitman, Shubuta, and Heidelberg, Miss., showed an average infestation of 2 per cent. At these places the average number of squares per plant was 25, and average number of bolls 6.

Alabama argillacea was observed in small numbers in the vicinity of Savannah, Ga., on July 6. At about the same time specimens of this insect were sent to the Bureau by a correspondent at Verbena, Ala. No infestation of this species has been reported from the central or western portions of the cotton belt.

In southern and central Texas the boll worm has been unusually abundant during the month. It has attracted much attention in regions in south central Texas where it has never been known.

A.C.Morgan reports that the tobacco hornworms are unusually scarce in Tennessee and Kentucky. The tobacco thrips in Florida has been held in check by excessive rains.

W. D. Hunter.

Truck Crop Insect Investigations.

Injury to potato, tomato, and many other truck crops continued to be the subject of much complaint during the month.

Many complaints of the potato flea-beetle (Epitrix cucumeris Harris) have been received practically throughout the range of this species even into two counties of Maine. Miss Edith M. Patch reported that this species is as bad as it has ever been in both Aroostock and

and Penobscot counties.

The spinach aphid (Myzus persicae Sulz.) began the trouble in the south and as the weather has warmed northward it has continued its range. This aphid feeds on practically everything. At the present writing injury to vegetables grown in New Jersey in general, and has caused much damage in Bergen county in the vicinity of New York. It has also progressed as far as Rennselaer. Its injuries have extended to Connecticut and Northern Illinois, through Ohio, Pennsylvania, and probably other states which have not been heard from. The spinach aphid appears to be somewhat on the decline, and it is the writer's observation and that of several reliable entomologists that this has been due partially to its destruction on low-growing plants by severe dashing rains which cover the undersurface of the leaves with dirt and also wash off the plant lice. Nevertheless, severe cases have been reported of much injury which can not be estimated.

The melon aphid has been quite common around the District of Columbia and is doing considerable damage. Doubtless complaints will be received throughout the month. At Norfolk, Va., during the first part of July this aphid occurred in large numbers on cucumber, cantaloupe, and to a less extent on squash, and it was found to be heavily parasitized, at least 50 to 60 per cent. The lady birds Hippodamia convergens Guer. and Megilla maculata were very active feeding and breeding among them. Afterwards continued and incessant heavy rains entirely destroyed the aphids on these food plants.

The strawberry aphid (Myzus fragaefolii) has been reported injurious in California.

Only a few cases of injury by the pea aphid (Macrosiphum pisi) have been reported. Many acres of peas have been ruined in Michigan by wet weather and disease due to atmospheric conditions, leaving no chance for the aphids to multiply.

The striped beet caterpillar (Mamestra trifolii) was reported July 21 by Mr. H.O. Marsh, infesting several acres of sugar beets near Pueblo, Colorado.

The common stalk borer (Papaipema nitela Guen.) has been very destructive in many localities.

By far the most important insect, according to growers, during the month is the sweet potato borer (Cylas formicarius). The sweet potato is largely grown in the South, but it is desired to increase the acreage. The insect after being obscure for many years has attracted much attention and an effort is being made to stamp it out, if possible, by restricting the distribution of seed tubers from uninfested areas. Its ravages extend from Florida and adjacent portions of Georgia and Mississippi to Louisiana and southward along the Gulf coast to Brownsville, Texas.

A severe outbreak of the onion thrips (Thrips tabaci Lind.) has been reported in Orange County, N.Y., an important onion-growing section.

The potato tortoise beetle was reported as attacking potato at East Lansing, Michigan, according to Prof. R. H. Pettit, Michigan Agricultural College.

On July 19, 1917, Mr. C. W. Beers, Horticultural Commissioner, Santa Barbara, Calif., wrote that the bean aphid (Aphis rumicis L.)

was beginning to show up in a few places on lima beans. At about the same time Roy E. Campbell, Scientific Assistant, wrote that this species had not quite disappeared from the region of Pasadena, Calif.

Mr. Thomas H. Jones reported injury to sweet potato in Washington Parish, La., with the statement that sometimes Cassida bivittata Say had caused severe injury. The presence of ants (Solenopsis geminata) was observed at Baton Rouge and at New Orleans destroying blooms of okra and causing distortion of the pods. The corn ear worm (Heliothis obsoleta Fab.) is as abundant as ever on tomatoes at Baton Rouge, La.

The squash ladybird (Epilachna borealis) was observed July 17, by D.C. Fink in great numbers ovipositing eggs on watermelon at Smithfield, Va., some larvae beginning to hatch at this time. This insect has been a serious pest to watermelons wherever they are grown. Owing to shortage of labor coupled with the heavy rains that have been occurring in the tidewater section the truckers are reluctant to undertake spraying. In fact, they are from three to four weeks behind in their cultivation and in other farm labor essential to the crops. At Norfolk Mr. Fink found the eggplant lace-bug (Gargaphia solani) in large numbers. The first adults of Cotinis nitida were observed on the wing on July 12 at that place and present in large numbers on July 24.

Mr. M.M. High reported that the bean thrips (Heliothrips fasciatus Pergande) had been very active at Kingsville, Tex., for the past month, injuring lima beans, snap beans, and cowpeas. More damage has been done by this thrips this season to the above crops than at any time previous so far as the writer's observations extend. In some instances crops of lima beans were almost a failure where remedial measures were not put to practice. At the same place the blister beetle (Macrobasis sp.) did much damage to tomatoes and melons early in June; in fact, the beetles were so numerous that they defoliated about all crops in their line of march.

F.H. Chittenden,

Deciduous Fruit Insect Investigations.

On the whole insect conditions in orchards, vineyards, etc. continue about as reported in the June circular. The codling moth, from present indications, will not be more destructive than average and probably less injurious than normal in some sections. Destructive hail storms have visited some regions and the injured fruit is usually more susceptible to codling moth attack than sound fruit. Such orchards should receive a supplemental spraying for summer broods of the codling moth. In the Pan Handle of Texas, however, as stated by Mr. Zuver, the insect has done enormous damage where no spraying was done.

Canker worms have been reported as locally abundant in portions of the New England States though no widespread injury apparently has occurred.

The pear Psylla, as reported by Dr. E.P. Felt, is rather variable in abundance in New York State, though common in unsprayed orchards in certain sections. On the whole its injuries will be less apparent than during recent years.

Apple red bugs are present in orchards in New York and elsewhere in the New England States, and in some instances have done damage. More effective spraying for this pest however is on the whole keeping it reduced below injurious numbers, except in a few instances.

The rose beetle or rose chafer, attracted rather more attention than usual, though the damage done was mostly to small gardens, home vineyards and home orchards.

Apple aphids have been remarkably scarce in damaging numbers, though some complaints have been received as to injury by the green apple aphid, especially in young orchards. Serious injury however is not anticipated, and it is now too late in the season for important injury from apple aphids as a class.

Numerous reports have been received by the Bureau from the New England States relative to the grape plume moth which appears to be rather more in evidence than usual. Dr. Fernald also reports receiving numerous inquiries about this insect.

A distinct outbreak of the grapevine tomato gall a relatively unimportant grape pest is to be reported, many examples of galls having been received from Northeastern United States, including the general region of Washington, D.C. Mr. Regan, of the Massachusetts Agricultural College, also reports numerous inquiries concerning it.

Mr. R.L. Nougaret, from Fresno, Calif, reports unusual abundance of (Tetranychus bimaculatus) on peaches, and that it is being satisfactorily controlled by sulphur sprays. The mealy plum plant louse is also reported to have been unusually plentiful around Stockton the latter part of June and early July. The insect is stated to have become a serious pest during the past two or three years throughout California.

The black cherry aphid in Michigan, according to Mr. F.L. Simanton, has been unusually prevalent in the western part of the state on sweet cherry, also occurring to some extent on sour cherry.

From West Virginia Mr. F.E. Brooks writes that the grape berry moth is more common in the vicinity of French Creek than for several years and that the grape curculio is also very abundant, 50 per cent of the fruit on unsprayed vines being infested with the egg-laying season still at its height.

The walnut curculio (Conotrachelus juglandis) is reported by Mr. Brooks as injurious to black walnut and butternut, practically all of the nuts on many trees having been attacked.

The bagworm (Thyridopteryx ephemeraeformis) has been reported attacking apple in portions of Virginia, the insect migrating from cedars presumably defoliated by it.

No change worthy of note is to be reported in regard to the arsenical insecticide situation, though it is apparent that the surplus of arsenate of lead and Paris green in the country is very low. Fortunately the season is rapidly passing when dangerous insect outbreaks are to be expected, which will improve the insecticide conditions for another year.

In a recent letter from Dr. C. Gordon Hewitt, he states: "You will be interested to know that as the result of our work in Nova Scotia during the past two or three years on arsenate of lime, it has largely replaced lead arsenate for orchard spraying, and Mr. Sanders, my officer,

who has been conducting these experiments, informs ~~me~~ that during this season its adoption has resulted in a saving of \$6,000 to \$7,000 in the purchase of dry materials."

A.L.Quaintance.

Tropical and Subtropical Fruit Insect Investigations.

Mr. Woglum reports that the period of very hot weather throughout the citrus regions of Southern California from June 14 to 17 was very destructive to insect life in general. In some of the sections the temperature was reported to have reached a maximum of 115 to 120 degrees F., these temperatures following rather abruptly a long continued cool spring. The following are Mr. Woglum's notes:

"In San Bernardino County, eastward from Rialto, the black scale in some orchards appears to have been eradicated, while in others the percentage of living insects is very small. In Riverside County, Horticultural Commissioner Sharp reports all young, eggs, and at least 80 per cent of the adults of this species have been destroyed. Other species of scale prevalent in these districts appear largely to have been killed.

From the Ontario-Upland section toward the coast, the effect of the heat is less marked than in the aforementioned districts. However, the scale was so reduced by the heat that many orchards of this region will not require insecticide treatment. In Ventura county, Horticultural Commissioner Brock reports most of his district so clean of scale that little fumigation will be practiced. Viewed as a whole, it appears that the destructive result of the recent hot weather in Southern California against citrus pests has been about equivalent to a season's insecticide treatment.

In regard to the black scale, the ovipositing insects appear to be more resistant to heat than the immature insects and eggs. These latter forms were largely destroyed in most sections. This condition is decidedly advantageous for insecticide treatment through making the generations more distinct, and fumigation this autumn should be unusually effective.

Living scale is largely found in the interior or more protected parts of the tree. A greater percentage of living scale is found on orange trees than lemon, due, undoubtedly, to the more dense type of the former species."

Mr. Woglum also reports a very serious increase in the abundance and damage from the Citrophilus mealy bug in the upland district of California, including the Upland-Ontario-Cucamonga districts. This mealy bug is reported as being very different in biology from the common citrus mealy bug and little attacked by enemies and more resistant to treatment. Experimental and demonstrational work in relation to this insect will immediately be undertaken in this section.

Dr.H.J.Quale, Entomologist of the Citrus Experiment Station at Riverside, in a letter to "The Sunkist Courier" (July, 1917), in connection with the very hot weather throughout the citrus regions of

Southern California from June 14 to 17, says: "On account of the heat killing practically all of the off-hatch, the present season will afford an excellent opportunity to make a complete cleanup in groves where uneven development of the scales has prevented satisfactory control in recent years." He strongly recommends fumigation in spite of this unusual destruction of scales wherever any living scales still remain on the trees, with the hope of making complete extermination in many instances.

Mr. W.N. Yothers reports from Florida that the white fly is reappearing in numbers, especially in Southern Florida, and that in the central part of the state the second brood is abundantly represented with the probability that by the third brood the pest will be present in normal numbers in southern and central counties. In the northern counties it is still scarce, and at Crescent City and DeLand not a single living insect was found. The same general condition applies also to the purple scale. Of the rust mite he says that this pest has become very abundant in all sections of the state notwithstanding the fact that not more than one in one hundred thousand survived the freeze of last February, the freeze delaying the appearance of the mite in maximum numbers only about a month. On May 3 at Crescent City, after a two days search only two mites were found, whereas on July 17 they were "literally present in billions". He reports that the progeny of one mite during five generations, extending over a period of about 10 weeks, might be upwards of twelve million, and he believes that this rate of multiplication has actually taken place at Crescent City this year. In respect to the fungus enemies of white fly and scale, in the examination of several orchards near Orlando, he was not able to discover any evidence of these fungi. This indicates a rather slow return of fungus control and all the more need of prompt application of direct measures of control.

C.L. Marlatt.

Forest Insect Investigations.

As a result of demonstration and instruction work in 1915 and 1916 on Long Island, New York, the menace to the hickory trees by the hickory bark beetle (Scolytus quadrispinosus Say) and to the oaks by the two-lined chestnut borer (Agilus bilineatus Web.) seems to be greatly reduced.

Following are extracts from a letter just received from Mr. Griffith who had general charge of the demonstration and instruction work:

"The trip to Long Island was a very satisfactory one. At each place that I visited I found the control work had been well carried out and that aside of the removal of the marked infested trees dead trees and fallen wood also had been taken away. The result is a great improvement of the woodlots as well as a probable insect control. The bordering woodland seemed to have less trees of last year's infestation for as much as a quarter of a mile back. I believe that the control has directly affected this improved condition."

The lime inch worm(Erannis tiliaris Harris) and the fall canker worm (Alsophila pometaria Harris) were reported causing damage in Avery and Ashe Counties, N.C. The Avery County agent wrote on June 11: "They are on hundreds of acres of timber, and are eating the hickory, chestnut, maple and some of the oaks clean as they go, and seem to be spreading very fast."

Mr. T.E. Holloway made the following report from New Orleans:

"In June members of the entomological force at Audubon Park, New Orleans, noticed many webs and larvae of the fall webworm, (Hyphantria textor) on willows, mulberries, Osage oranges, and other trees in the vicinity of the city - across the Mississippi River southwest of Marerro (formerly Amesville) on the road to Shell Beach, near Hahnville, and other points on the Texas & Pacific Ry., and on the road to West End. During the latter part of the week of July 8th the business section of New Orleans was invaded by myriads of the small white moths of this species. On the morning of Friday, July 13th, when they were most numerous, they were observed in great numbers resting on buildings and telephone poles. The appearance of poles and other objects in the early morning was as if they had received a thorough coat of whitewash. The tops of several large hotel and department store buildings in New Orleans are illuminated nightly by rows of electric lights, and these together with the street lights and electric signs of the business section produce a radiance against the sky which can be seen for a long distance. It is evident that a large portion of the moths flew past or above hundreds of ordinary street lights to reach the brilliant illumination of Canal Street. Eggs have since been taken on sycamore, and probably many other varieties of trees will soon show evidence of damage."

Mr. J. Kotinsky notes an apparent increase or at least extensive prevalence of white tussock moth caterpillars on a great variety of shade trees in Washington and the District of Columbia generally. On June 27 he found similar conditions in the parks and suburbs of Philadelphia. Many trees were noted completely defoliated and a great number of elms and other trees were undergoing that process, notwithstanding the tanglefoot bands girdling them. While great numbers of the caterpillars were observed held in check by the bands, the numerous individuals that have evidently crossed the barrier and the festoons of caterpillars dangling on their threads in enormous numbers from the limbs of the trees high above ground showed the futility of depending altogether on such bands for controlling this insect.

Rather numerous inquiries about this insect from parts of Illinois, especially in and around Chicago, would indicate increasing infestation by this insect there as in some sections here in the East.

A.D. Hopkins.

Bee Culture.

During July circulars were sent to beekeepers in a number of states which had not previously been covered. It was necessary to spend considerable time in correcting and enlarging the list of beekeepers on

file in this office. Work has been begun on the campaign on wintering, and envelopes are being addressed to beekeepers in those states where such work is most needed. These circulars will not be mailed until September 15.

The white clover crop has been greatly delayed by bad weather and it is impossible to tell what the crop will be. In California the crop was below normal and in Texas the early crop was almost a complete failure. Other regions still have honey flows to come.

Speculation in honey this season has greatly disturbed market conditions and it is too early to tell what prices will be paid for the bulk of the crop. Present prices are unusually high.

E.F.Phillips.

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GENERAL REPORTS ON CONDITIONS IN STATES.

ARIZONA.

On July 24, Dr. A.W.Morrill wrote as follows:

"The differential grasshopper has been excessively abundant in several sections of the Salt River Valley, the principal agricultural district of this state. They have defoliated and in some instances killed young apricot trees and have seriously injured olive trees. Their principal attack however has been in alfalfa fields and cotton fields. In cotton fields the use of poisoned bran mash has been very successful but in alfalfa fields heavy applications of the poisoned bait have destroyed as a rule only fifty or sixty per cent of the hoppers. In cotton fields the efficiency of the bait has been over 95 per cent.

The alfalfa caterpillar (Eurymus eurytheme) appears to be more abundant than usual this year but the bacterial disease is already beginning its work in some fields.

Bean ladybirds are doing a good deal of damage to the beans in northern Arizona owing to the fact that the farmers neglected to provide themselves with spray pumps and poisons. From eastern and southern Arizona no reports of bean ladybird damage have been received.

The western rose chafer (Macrodactylus uniformis) appears to be unusually abundant in some sections of the state injuring apples."

ARKANSAS.

On July 21, Mr. Geo.G. Becker wrote as follows:

"In last month's report no mention was made of the damages caused by (Ligyrrus rugiceps). This insect caused more damage to corn last month than it has caused in any previous recorded year.

The cotton boll weevil is giving us unexpected trouble this year. Owing to the low temperatures of last winter we had not anticipated much difficulty with the insect, but unless we have a period of drought, present indications point to damage to cotton which will be considerably above normal for Arkansas.

During the month we have received reports of injury to cotton squares, caused by the click beetle, (Monocrepidius vespertinus), and also by the leaf-eating (Colaspis brunnea), the latter causing damage by feeding on leaves as well as by injuring young cotton squares. We have received one report of injury to corn caused by (Elaemopalpus lignosellus). Late corn is being injured to some extent by the corn ear worm (Heliothis obsoleta).

I make note of damage caused by woolly aphis as a result of our heavy hail storms this spring. Northwest Arkansas had some destructive hail storms this spring which caused, in many instances, the splitting of bark of some of the tender trees. Although the aerial form of woolly aphis on apple attracts attention only rarely in this country its presence on these hail wounds has been such as to cause us to receive a number of inquiries concerning its control."

CONNECTICUT.

On July 30, Dr. W.E. Britton wrote as follows:

"The wheat midge has damaged rye in Yalesville and slightly injured winter wheat in Westport. Potatoes in Hartford, New Haven, Fairfield, Lolland and Windham Counties have been injured by aphids. The rose chafer though late finally appeared in destructive numbers. White marked tussock moth and the eight-spotted forester are abundant in the vicinity of New Haven."

FLORIDA.

On July 21, Dr. E.W. Berger wrote as follows:

"The cottony-cushion scale is spreading and increasing, as indicated by specimens and reports received herein the office. The recognized method of control consists in introducing the Vedalia or Australian lady bird beetle. The entomological department of the Plant Board furnishes colonies of 10 to 15 beetles at \$1.00 per colony, the beetles either being reared here in the laboratory or collected in the field by the inspectors.

Report of a very severe infestation of sweet potato vines by the sweet potato caterpillar at Crescent City has been received. Similar reports have been received from other localities.

The red-banded thrips has been reported again as severe on mango trees in the Miami section. The common greenhouse thrips also continues to be injurious in about the same localities as the red-banded thrips.

Heliothis obsoleta continues to be injurious on corn at Wauchula and other localities on tomatoes and peppers.

The sweet potato weevil, (Cylas formicarius) has recently been received from two new localities, namely; Ft. Pierce in St. Lucie County and Sanibal Island in Lee County. Heretofore it has appeared in south Dade County, Broward County, Palm Beach County, and Baker County. Several shipments of infested potatoes from Cuba have also been intercepted at Tampa and Key West."

On July 21, Prof. J.R. Watson reported the following:

"The following insects are doing more or less damage now. The sweet potato caterpillar (Prodenia ornithogalli) and (Prodenia commelinae) are beginning to do considerable damage to sweet potatoes. We are always bothered with these more or less during August but they seem to be getting in their work earlier this year and it is quite possible we shall have more or less serious trouble with them. We have found that we can control them very well with the poison bait (Kansas mixture) which is used against cutworms. The melon aphid is now abundant on late watermelons. The pickle worm and the melon worm are very bad on late cucumbers and cantaloupes. Fortunately the season for watermelons is about over and the commercial shipping of cucumbers and melons is entirely over in the state, so this outbreak is too late to be a serious damage. The velvet bean caterpillar (Anticarsia gemmatilis) has arrived in the Gainesville section. They are found in Palm Beach County as early as the middle of May but as yet no serious damage has been done to velvet beans. (Adelphocoris rapidus) is injuring cotton about Gainesville, causing the young bolls and squares to drop."

INDIANA.

On July 28, Mr. Frank N. Wallace wrote as follows:

"Aphids have been doing considerable damage to most garden crops in the cities of this state, where these gardens were planted on ground which has not been in cultivation for a number of years. In old gardens the damage, as a rule, has not been severe and in many the aphids are not in evidence. Ants seem to have been largely responsible. Hundreds of colonies can be noticed in these new gardens and are seldom found in the old ones.

Tussock moths are a serious pest in the north part of the state, on shade trees, but I have recommended that the towns let the parasites control them and save the arsenate of lead for the crop next year, and this advise is being generally followed.

Grape hoppers will do damage in some sections before the season is over but in only a few cases thus far has serious damage been done to crops; then bran mash was used with excellent results.

Many more reports of damage by pests are received, but this indicates a greater interest in insect control rather than an increase in crop pests with the exception of garden pests, as before stated."

KANSAS.

On July 24, Prof. Geo. A. Dean wrote as follows:

"In the western part of the state there have been several local outbreaks of grasshoppers. In nearly all cases the farmers have the situation well in hand and are having no difficulty in controlling the grasshoppers with the poisoned bran mash, flavored with either lemon or orange juice. In several districts the farmers are organized for concerted action.

While there is no general outbreak of chinch bugs, there are several local infestations. Very probably the infestation will become serious enough to warrant the organizing of counties for cooperative burning of the winter quarters of the bugs."

KENTUCKY.

On July 21, Prof. H. Garman wrote as follows:

"We are now giving special attention to one of the plant lice that has appeared in exceptional numbers on potatoes and tomatoes in Kentucky. Many of our correspondents have been writing us with reference to treatment. It appears to be (Macrosiphum solanifolii), noted by Doctor Patch as injurious to potato, eggplant and rose in Maine. We have never experienced such an outbreak before and assume it to be associated with the general planting of potatoes and tomatoes this spring. During the past week we have noticed the appearance of Hymenopterous parasites in numbers, and also of an Empusa which seem to be reducing the numbers of the pests, and we hope the outbreak will soon be over."

MAINE.

On July 25, Dr. E.M. Patch wrote as follows:

"Three lots of stalkborers, (Papaipema nitela) in corn have come in from Gorham, Maine, and by way of the State Department of Agriculture, Augusta, Maine. Caterpillars from half-grown to full size.

Rose chafers are still at work on beans as far west as South Berwick.

Woolly bear caterpillars have come in rather abundantly from various localities, all in first instar, and on garden vegetables. I have not yet taken pains to see whether these are (D. virginica) or E. acraea) both species at times being common here.

Archips cerasivorana has webbed the choke cherries over an area of many square miles. I have not personally seen one of their tents on pin cherry though choke cherries near may be loaded, except that they reduce the crop of choke cherries for the birds and render the landscape messy. These insects seem to have no economic bearing in Maine where black knot keeps the cultivated cherry pretty well out of commission."

MARYLAND.

On July 26, Prof. E.N. Cory wrote as follows:

"Myzus persicae did a great amount of damage in Somerset county threatening for a while to destroy the entire canning crop of tomatoes. The outbreak is under control owing to the efforts of the county agent and dissemination of information by this office. I am enclosing several circulars which were issued to the county agents and press.

I received a report from Washington county, in the western part of the state, that an aphid was injuring potatoes there, so I made an investigation, finding that the same aphid was present in serious numbers and was apparently responsible for the reduction of yield from the normal production in that county. I also investigated the tomatoes and potatoes in Anne Arundel and Prince George counties finding that (Macrosiphum solanifolii) is the species injuring the two crops in those counties. We have received a number of requests for information in regard to the plant lice, indicating that one or the other of the pests has had rather wide prevalence.

I further followed up the matter of the corn or tobacco root web worm, (Crambus caliginosellus Clem) finding that it is present in serious numbers in five counties.

The corn root aphid seems to be decidedly on the increase in this state as we have received several reports and I have seen fields in four counties badly damaged."

MASSACHUSETTS.

On July 27, Prof. W.S. Regan wrote as follows:

"The insects which have been most noteworthy because of their depredations during the week ending on July 27, are plant lice and the stalk borer. No less than twenty-five reports have been received of severe injury to potato plants by plant lice. I have had occasion to see

MEMORANDUM

TO : The President, The Board of Directors, and the Executive Committee
 FROM : The Secretary
 SUBJECT: The proposed plan for the reorganization of the company.

1. The proposed plan for the reorganization of the company is as follows:

2. The plan is based on the following principles:
 (a) The company should be organized into a number of departments, each headed by a manager.
 (b) The departments should be organized on a functional basis.
 (c) The company should be organized into a number of divisions, each headed by a division manager.
 (d) The divisions should be organized on a product basis.
 (e) The company should be organized into a number of divisions, each headed by a division manager.
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the work of these insects in a few potato fields and there is little doubt that if this injury continues the potato crop will be seriously jeopardized. In addition to potatoes plant lice are also causing injury to other garden crops, such as carrots, beets, parsnips, celery, spinach and lettuce.

No less than half a dozen reports of injury, have been received during the past few days, by the stalk borer. The plants attacked have been corn, potatoes and tomatoes, corn and potato plants apparently being more often attacked than tomato plants.

One report was received from Pittsfield of injury by the parsnip web worm. It was stated that several rows of parsnips and carrots were practically destroyed by this insect. One report has been received of injury by the onion maggot. A few reports have been received indicating injury to the tassels of corn by pale green caterpillars about half an inch long, which are gregarious in habit. In one instance specimens of the caterpillars were received but I have as yet been unable to identify the insect causing the injury. These caterpillars feed upon the tassels sometimes boring into the terminal stems."

MICHIGAN.

On July 28, Prof. R.H. Pettit wrote as follows:

"The bean root louse is getting to be quite prevalent in Michigan right now, and an entirely new trouble developed this week. Potatoes in the hill we find scooped out by something, and a thorough examination has thus far failed to reveal mole cricket, white grub or anything else, excepting a large slug which I identify as (Limax agrestis). Invariably in these cavities we find the Limas, and I may say that Limax agrestis is an European species which is becoming distributed in Michigan, and which has made us some trouble in the celery fields, and in some of the forcing houses and market gardens. We have obtained more results thus far with the Kansas bait than with anything else. I cannot feel quite sure that we may not find something else in the fields, since it seems almost unbelievable that a slug could do so much damage. Their work is restricted to low wet regions, and thus far confined to land which has been in gardens for a succession of years. I have seen the same thing at Ithaca, New York, in lettuce, beans, pansies, etc., eating the tops. (Siphonophora avenae) is scaring the grain growers a little bit, but we are not worried about it much. The season is very late here at Lansing. The wheat harvest is not yet begun."

MINNESOTA.

On July 28, Prof. F.L. Washburn wrote as follows:

"This appears to be a normal summer as far as insect pests are concerned. The fact that the number of gardeners, largely amateur gardeners, have been increased a hundred fold or more as the result of the war has occasioned more inquiries, but we do not believe that the

1. The first part of the report deals with the general situation of the country and the position of the various groups. It is a very good summary of the situation and is well written. It is a very good summary of the situation and is well written.

[Faint, illegible text]

season is especially marked by the occurrence of injurious insects in unusual numbers. We have had, however, in the early part of the season an enormous number of inquiries regarding remedies for various cut worms. There has also been much complaint regarding plant lice of various forms. Stalk borers, (Papaipema spp.) have been extremely troublesome in gardens. It was feared from last year's indications that we might have a grasshopper outbreak this season, but this has not materialized to any extent. The usual trouble from the current sawfly, the striped cucumber beetle, potato beetles, and several serious problems in wire worm injury present themselves for solution. The bean maggot fly has been the cause of some correspondence.

An interesting point regarding insect injury this year is the fact that insects commonly widespread seem to be only locally injurious in Minnesota this season. For example, we have had possibly in the height of the season 20 to 25 calls over the telephone regarding serious cutworm injury, and yet certain sections report not having seen a cutworm. The same might be said though to a less extent in connection with potato beetles.

MONTANA.

On July 24, Prof. R.A. Cooley wrote as follows:

"The grasshopper concerned in the outbreak in western Montana has been found to be the Rocky Mountain migratory locust, (Melanoplus spretus Uhler). This is the first time in recent years that this species has been taken in Montana. It is now the predominating species in the outbreak which extends through about five counties in parts of which the insects have been present in large numbers. Control work has been conducted on a large scale. The farmers have cooperated willingly with the Federal and State entomologists, and many thousands of acres of crops have been saved. During the past few days parasitic flies, (Sarcophaga sp.) have been found in great abundance and maggots are destroying the grasshoppers. The situation is being watched with great interest to see whether or not the parasites will overcome the outbreak and prevent the deposition of eggs enough to repeat the outbreak next year. These flies have been found wherever the grasshoppers are abundant.

Another note is a serious shortage of arsenicals was suspected in Montana and an effort was made to locate a supply. It was found that arsenite of zinc could be secured in quantities at thirty cents a pound and through the county agents of the state, potato growers were informed and advised to use zinc arsenite as a substitute for Paris green, pound for pound. This is being done extensively in Montana."

NEBRASKA.

On July 23, Prof. Myron H. Swenk wrote as follows:

"Grasshoppers have become numerous and destructive over most of the state west of the 100th meridian. As usual, alfalfa fields are the most injured, but lately reports of severe injury to corn have been received. Severe outbreaks in Garden, Scotts Bluff and Red Willow counties

1 2

have received or are receiving special attention by field men from this office. The stalkborer has been unusually injurious during the past month in eastern Nebraska to field and sweet corn, potatoes and tomatoes. Many corn fields had the outer rows destroyed by these caterpillars during the middle of July. In western Nebraska the pale striped flea beetle was severely injurious to field beans. Aphids continue to be numerous and destructive, especially the cabbage aphid, which has this season been more injurious than ever before in this state, while the melon aphid and bean aphid are both giving much trouble. There has been more than the usual amount of complaints of injury by the pear slug and rose slug. An unusual case of injury to a field of growing potatoes by (Leucostermes flavipes) at Sterling, Nebraska, came to our notice during this month. The abundance of grasshoppers is as usual correlated with an unusual abundance of blister beetles, chiefly (Epicauta lemniscata), which have locally proved injurious in alfalfa and potato fields. The larger cities of eastern Nebraska are experiencing more injury to the maples and elms by the white-marked tussock-moth than has occurred for the past ten years."

NEW JERSEY.

On July 13, Dr. T.J. Headlee wrote as follows:

"I regret to report a severe epidemic of plant lice on vegetable crops. Generally potatoes, tomatoes, egg plants and cabbages are the ones most severely infested. The area of serious infestation appears to cover the entire northern half of the state. The species of plant lice have not yet been determined. I have also to report that this year has witnessed one of the largest flights of Lachnopterna species that we have experienced in several years. The area covered by these species includes the entire state."

A later report from Dr. Headlee, dated July 30 was made by telegram. It is as follows:

"Potatoes in Northern New Jersey seriously injured by plant lice which are also present in the southern part. Tomatoes are now suffering more from plant lice than any other vegetable crop. Lice are found on nearly all the principal crops. Green apple aphid curling terminal leaves on much of the new growth, larvae and cocoons of the white tussock moth are appearing generally on trunks of maple, elm, and other shade trees. Unless eggs are not viable a thorough campaign for control against these insects will have to be started. Colorado potato beetle less abundant than I have ever seen it. Elm leaf beetle on decrease for several years was very little seen this year. Ravages of the leopard moth checked. Injury by plum curculio on apple and peach has been worse this year than for a number of years. Only the maintenance of a good coating of the regular spray materials throughout the first two weeks following the dropping of the apple blossoms has been sufficient to prevent injury."

NEW YORK.

Dr. E.P.Felt submitted the following on July 27.

"Army worm (Heliophila unipuncta) was locally abundant on eastern Long Island in early July.

Blister beetles appear to have been unusually abundant and destructive, Say's blister beetle injuring the blossoms of cherries, working upon the flowers of beans, and in one instance attacking clover and vetch. The gray blister beetle and the two-striped blister beetle appeared in numbers in potato fields, particularly in the northern Hudson Valley.

Potato aphid (Macrosiphum solanifolii). This insect has been generally prevalent and very injurious in southeastern New York, especially south of Poughkeepsie and on Long Island, killing potato plants in many localities and becoming dangerously abundant on tomatoes. It is estimated that one-fourth of the potato crop in the vicinity of Kingston was very seriously damaged, and that early spraying with a tobacco extract resulted in protecting the vines very satisfactorily. Natural enemies have appeared on Long Island and in Ulster County, and it is probable that they will soon gain control of the pest.

Seed corn maggot (Phorbia fusciceps) has been exceedingly destructive in New York. The reduction in stand of the 1700 acres of beans in Chautauqua county varied from 10 to 20 per cent and ran as high as 50 per cent. The loss averaged about 40 per cent for Erie County, the area in beans being 10,478 acres. That in Genesee county was estimated at 50 per cent, the loss on seed alone in towns being as follows: Bergen, \$2800; Byron, \$2852; Elba, \$2500; Oakfield, \$2400; Stafford, \$4500; Fifty to seventy-five per cent of the 16,000 acres of beans in Monroe county were destroyed. Approximately one-fourth of \$98,000 worth of seed was lost in Orleans county. The damage in Wayne county was very serious, one 10-acre lot being almost totally destroyed. The loss appears to have been less in fields where the seed was put in at a comparatively slight depth with a planter rather than in those drilled in deeper. The maggots were apparently greatly favored by the cool weather and the frequent and excessive rains.

Wheat midge. "False heads" in rye, some at least infested by wheat midge, were found in the Hudson Valley during early July, a few fields showing considerable injury. Later reports indicate a general though not a serious infestation of rye. The latter part of the month premature ripening of wheat revealed the presence of the midge in the wheat-growing section of western New York, the insect being reported as very bad throughout Niagara county and as having destroyed one-fourth of the normal yield, both red and white wheats being affected. An examination of infested wheat heads showed practically 32 per cent of the kernels blasted or shrunk. This pest is also locally abundant in Erie and Genesee counties, and generally present though apparently not very injurious in Ontario county. It undoubtedly has been greatly favored by the moist weather of the last few weeks.

NORTH CAROLINA.

On July 23, Mr. Franklin Sherman, Jr., reported the following:

"The complaints and inquiries of the month have covered a wide range. The only occurrence of epidemic nature was that of several local outbreaks of lime inch-worm and fall canker-worm which defoliated forest trees in the northwest part of the state (mountain region).

Aphids in general have been more complained of than usual for the season, on cotton, corn, turnips and other plants. On cotton they have been much checked by lady beetles and parasites.

Other pests which have been reported are: Tobacco thrips, corn bud worm, melon beetles, cabbage worms, cotton red spider, corn ear worm, pine bark beetles and fruit bark beetles.

Extension work in beekeeping is progressing well. A large crop of honey was gathered in eastern North Carolina. Investigation of foul-brood conditions in western section is now under way. Annual inspection of nurseries is in progress. A month's scouting by a government expert has not revealed pine blister rust in our white pine region.

OHIO.

On July 26, Prof. H.A. Gossard wrote as follows:

"The most important entomological feature of the year in Ohio has been the outbreak of the potato and tomato aphid, (Macrosiphum solanifolii), during the past month. It was first heard of in the southwestern part of the state, developing in the fields about Cincinnati. It rapidly got under headway and tomato fields that were expected to yield several hundred dollars per acre yielded not more than one hundred dollars.

An epidemic of blight seems to be developing following the aphid outbreak. It would be difficult to estimate the damage that has been inflicted to the potato and tomato crops of the state, but at an offhand guess, which may later need considerable revision, it will amount to 10 per cent of the crop and if blight develops following it, the injury may reach from 25 to 50 per cent. As much as 70 per cent of the tomato crop was destroyed over one-half of Hamilton county.

The Colorado potato beetle has been rather less in evidence this year than last, probably because prompt efforts were taken over the entire state to exterminate the first comers.

The stalk borer, (Papaipema nitela), has caused considerable damage to corn, having been received from 15 or 20 different points during the month.

The cherry crop has been harvested and for all northeastern Ohio I would estimate that from 15 to 25 per cent of the crop was wormy.

There is a general outbreak of the tussock caterpillar over the entire state and about 20 reports have been received during the month, these coming from every quarter of Ohio. In some cases large spraying operations are contemplated to save orchards, basswood plantings, etc., from defoliation.

THE STATE OF TEXAS

BEFORE ME, the undersigned authority, on this day personally appeared _____, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this _____ day of _____, 19____.

Notary Public in and for the State of Texas.

ON this day I, _____, Notary Public in and for the State of Texas, do hereby certify that the foregoing instrument was duly executed by the person whose name is subscribed to the same, and that he acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this _____ day of _____, 19____.

Notary Public in and for the State of Texas.

IN WITNESS WHEREOF, I have hereunto set my hand and seal of office this _____ day of _____, 19____.

Notary Public in and for the State of Texas.

The fall webworm is considerably in evidence at Wooster. The raspberry byturus has been a subject of inquiry from Creston, Ohio, and I notice considerable damage to the crop around Wooster.

The basket worm has been received from four or five points during the month.

The zebra caterpillar has been the subject of perhaps a half dozen inquiries.

The elm leafbeetle is reported as having defoliated the elm trees on the school grounds at Germantown.

The bronze birch borer has been received from Madison, Ohio.

The lappet moth, (Tolpe vellela) was received from the county farm at Troy, Ohio, being reported by our Mr. Ballou to occur in dozens on the trees, in some cases threatening to defoliate them."

OREGON.

On July 18, Prof. A.L. Lovett wrote as follows:

"A delayed outbreak of cutworms and grasshoppers is reported from Weston, Umatilla county. While the attack does not seem to be general, it is quite severe over a limited area.

The Colorado potato beetle which was first reported in Union county in 1914, has spread steadily until it has now reached well into Wallowa county.

Specimens of the wheat stem borer (Oscinis sp.) were received from Grants Pass, Josephine county, reporting a general infestation of the pest.

Under the head of apiculture, will say that the honey flow in Western Oregon has been exceptionally good up to this time, though but little honey is coming in at present. The presence of both European and American foul brood in practically every district, and very generally distributed, is doing much to hold down what would otherwise be a very heavy crop of honey for western Oregon this year."

PENNSYLVANIA.

On July 26, Mr. C.H. Hadley, Jr., wrote as follows:

"The potato stalk borer (Trichobaris trinotata) has been common in the southern part of the state.

The stalk borer (Papaipema nitela) has been exceedingly destructive in many sections, attacking corn, potatoes and tomatoes.

Aphis on potato plants has been very destructive. It has been reported in more or less abundance from practically all the potato growing sections of the state. Injury to gardens from both lice and stalk borer has been especially severe.

The clover leaf weevil (Hypera punctata) has been quite destructive in several of the southern counties.

So far as has been observed, codling moth (Carpocapsa pomonella) has been conspicuous by its absence.

The rosy aphis (Aphis sorbi) has been very destructive in orchards. Slugs (Limax sp.) have caused a great deal of loss to gardens throughout the state."

SOUTH DAKOTA.

On July 23, Dr. H.C. Severin wrote as follows:

"At the present time in South Dakota, grasshoppers are doing an enormous amount of damage in alfalfa fields, and corn, potato, and small grain fields neighboring alfalfa patches. We are fighting the grasshoppers with the poison bait and with grasshopper catching machines. In many sections of South Dakota, Paris green or white arsenic cannot be obtained, or else the price is looked upon as prohibitive. In such sections of the state we are using the grasshopper catching machines entirely. The common field cricket is also doing quite a bit of destructive work in alfalfa fields, where the crickets are destroying the seed. Blister beetles of a number of different species are also with us in large numbers."

TENNESSEE.

On July 25, Prof. G.M. Bentley wrote as follows:

"Peach leaf slug (Caliroa amygdalina Rohwer). On July 11 these were found in large quantities feeding upon the leaves of the young peach trees in one of the large nurseries in Tennessee. Considerable damage is apparent for many of the leaves had been injured and dropped off. The infestation occurred in spots in which fully 75 per cent of the stock showed the presence of this insect.

The tarnished plant bug, (Lygus pratensis), The supposed cause of setback in young peaches, is causing considerable injury to the young peach stock in the nurseries of the state.

The two-striped sweet potato beetle, (Cassida bivittata Say.) was found on July 10 at Dresden, Tenn., doing considerable injury to the leaves of sweet potatoes. This is the first report occurring in twelve years that we have had of this beetle doing injury in Tennessee.

Many plant lice are occurring in large numbers and causing more or less loss throughout the state. The chief ones are: (Aphis persicae niger Er.Sm.) occurring chiefly on peach, plum and cherry trees and grape vines. (Aphis brassicae Linn) occurring on turnip, cauliflower and late cabbage. (Aphis pomi DeG.) occurring on apple leaves in orchards and in nurseries. (Aphis forbesi Weed) occurring on strawberry leaves and leaf petioles. The corn root louse, (Aphis maidi-radicis Forbes) is being found on the roots of corn in many places in Tennessee.

The chinch bug (Blissus leucophaea Say) occurred in limited numbers in a few counties of Middle Tennessee in June. The continued rainy, cloudy weather in July has been the means of checking what might have been a serious outbreak of this insect."

TEXAS.

On July 25, Prof. F.B. Paddock wrote as follows:

"Throughout the southwest it has been so dry that crops have been an absolute failure and consequently the insect pests of normal years have not appeared.

The chinch bug has been reported from the southeastern section as doing some little damage to rice in the drier sections of the fields.

In the western section of the state the cold late spring and

the drought which followed has been very^{un}favorable to insect pests. There has been some damage to alfalfa by grasshoppers but these have not been present in as great numbers as last year.

In the central section of the state the chinch bug has been present but conditions have generally been unfavorable and the pest has not done much damage as in previous years. The boll worm has been present but the injury by this insect will undoubtedly be more noticed upon cotton.

Throughout the northern section of the state, conditions have been favorable for the usual insect pests. The chinch bug has done some damage and is generally present in the corn fields. The cotton boll worm is already present and will undoubtedly do considerable damage."

On July 17, Mr. Neill D. Zuber wrote as follows:

"Chinch bugs, (Blissus leucopterus) have been reported as a serious menace to corn and oats in Dallas, Hunt, Hopkins, Franklin, Titus, Upshur, Navarro, Ellis, Walker and Hill counties.

The codling moth has done an enormous damage to Texas apples in sections of the Pan Handle and Northwest Texas, where no spraying was done.

The melonaphis has been damaging large cucumber areas east of Austin, in Travis county.

The white grub, (Lachnosterna arcuata) was found doing great damage to strawberries and corn in parts of south Texas. The adult beetles were attacking tree foliage in hordes."

VIRGINIA.

On July 26, Prof. Loren B. Smith wrote as follows:

"During the present season the eastern Virginia truckers have suffered severe losses from three notable outbreaks of insects. The Colorado potato beetle in certain localized areas caused a reduction in the yield of early potatoes of 20 to 40 per cent in spite of the fact that the crop in most cases was well sprayed. So numerous were the insects at times that good sized plants were stripped of their foliage in twelve to twenty-four hours. The greatest damage was done rather late in the season, between the 20 of May and the 15th of June.

In Accomac and Northampton counties of the Eastern Shore peninsula there were particularly severe outbreaks of the green potato aphid (Macrosiphum solanifolii Ashm.) during May and June.

The watermelon growers on the York and Nansemond Rivers have suffered considerably from the depredations of the squash ladybird beetle (Epilachna borealis)."

WISCONSIN.

On July 26, Dr. E. D. Ball wrote as follows:

"Entomological conditions in Wisconsin at the present time are very favorable. The spring was cold and backward, prolonging the injury caused by cutworms, wireworms and other similar insects. On the other

hand, potato bugs were very scarce and grasshoppers very late in making their appearance. Cucumber beetles disappeared suddenly early in July so that just at the present time there is no disturbing outbreak. The June beetle flights were small and distributed through a long period, probably due to the cold season. Just now the weather has turned very warm, the young grasshoppers are hatching in large numbers in certain areas and there may be damage reported later from this source. Potato bugs have not caused any damage to date and the farmers are spraying their vines in anticipation so that there should be little loss from this source."

On July 28, Mr. H.F. Wilson wrote as follows:

"The common stalk borer (Papaipema nitela) is becoming a common pest throughout the state and is causing a great amount of damage to potatoes.

Myzus persicae Sulz.) has been very abundant on potatoes in the vicinity of Madison. It is common on cabbage and is more common than the cabbage aphid.

The common cabbage worm (Pontia rapae) has been scarce this season, but is now becoming more abundant. Early cabbage was not affected at all and late cabbage has suffered little injury.

The Colorado potato beetle is just becoming a bad pest. At this time a considerable amount of spray is being put on the plants since the beetles are appearing in considerable numbers. The potato flea beetle has been extremely abundant and I do not believe the growers in any way realize the damage being done. At Waukesha on the 16th of July, many hundreds of young leaves had been seriously damaged if not destroyed by the punctures of this insect. Perhaps the main reason for the damage is the fact that the growers did not spray for the Colorado potato beetle.

One of the most interesting plant pests which we met with this spring is a small grayish slug which occurs not only in grain fields but in many gardens where they completely wiped out young tomato plants and beans. I have not yet succeeded in securing a determination."

MISCELLANEOUS.

Prof. C.R.Crosby submits the following statement about the emergency entomological work in New York:

Emergency insect pest control work has been conducted under the New York State Food Supply Commission. Commissioner A.R.Mann is in charge of this division of the work. Food conservation by the prevention of losses by insect pests and plant diseases has been organized with H.H.Wetzel as leader of the plant disease work, C.R.Crosby, leader of the insect pest control work, and E.P.Felt in charge of the insect pest survey and information service.

In conducting the work of food conservation through the prevention of losses from insect pests and plant diseases use has been made of field assistants or field agents, cooperating with existing local agencies and working under careful supervision.

For field assistants young men have been selected who have had technical training in plant pathology and entomology and who also have had practical experience in growing the crops with which they have to deal. In the fruit growing counties only men were chosen who had been brought up on fruit farms or who had worked for several years on such farms. They have been placed only in counties where the local demand for their services was great enough so that the local farmers' organization was willing to furnish some means for transportation within the county, a motorcycle or automobile.

The field assistant works in close cooperation with the farm bureau manager thus avoiding any duplication of effort and utilizing the farm bureau organization for learning the needs of the county, for arranging demonstrations, and for aid in reaching the individual farmers in each community.

Field assistants are under the supervision of experts thoroughly trained and of wide experience in demonstration work. These experts not only make sure that the information given out is sound but also see to it that the most efficient methods of disseminating such information are followed.

The field assistant is in the field practically all the time visiting the farm and examining the crops. He is able to detect the presence of injurious insects while it is still time to fight them effectively. He also advises the farmers as to the most practicable and effective methods of applying spray materials.

The plan of doing this work by means of field assistants was adopted because experience has shown that the greatest good can be accomplished in the control of insect pests and plant diseases by having a trained man located in a definite territory where he can become thoroughly acquainted with the local problems, can watch the crops throughout the growing season and by his intimate knowledge of conditions be able to anticipate and prevent destructive outbreaks. Work of this type is not new in the state. Field assistants have been employed on the basis of individual fellowships in many instances. The local organization of farmers has furnished the funds and the College of Agriculture has supervised the work. In many cases the farmers have been

CONCLUSION

From the above it is seen that the following are the main points of the report.

The first point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The second point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The third point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The fourth point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The fifth point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The sixth point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The seventh point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The eighth point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The ninth point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results. The tenth point is that the report is a summary of the work done during the year 1954. It is not a final report, but a preliminary one. It is intended to give a general idea of the work done, and to show the progress made. It is not intended to be a detailed account of the work, but a summary of the main results.

willing to finance the work for several years in succession. The College has never financed work of this kind because it was felt that local enterprises should, under normal conditions, be supported locally. It takes time, however, for the farmers to organize local organizations even where they are conscious of the need of the kind of service. Under the present emergency conditions we therefore felt justified in organizing this system of field advisors or assistants. It is hoped that when conditions again become normal the local farmers' organization will be convinced of the value of this service and will arrange to support it financially.

We now have in the field two assistants working with vegetable crops, and seven on potato work.

